Alberta

A Bibliography of Final Reports for Energy Conservation and Renewable Energy Research Projects

Projects supported in part
by the Alberta/Canada
Energy Resources
Research Fund

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Foreword

Beginning in 1976, numerous projects were initiated in Alberta by industry and academic research institutions to help make better use of Alberta's energy resources.

These research, development and demonstration efforts were funded by the Alberta/Canada Energy Resources Research Fund (A/CERRF), which was established as a result of the 1974 agreement on oil prices between the federal government and the producing provinces.

Responsibility for applying and administering the fund rested with the A/CERRF Committee, made up of senior Alberta and federal government officials.

A/CERRF program priorities focused primarily on coal, energy conservation and renewable energy, and conventional energy resources. In 1988/89, a hydrogen research component was added.

Administration for the A/CERRF program was provided by staff within the Research and Technology Branch of Alberta Energy.

The A/CERRF program ended on March 31, 1991 and the support it provided has been replaced by funding from the Alberta government.

A series of technology transfer booklets begun in 1986 with A/CERRF support continues to make research results available to industry and others who can use the information.

This service will continue until all A/CERRF projects have been described.

For more information about other publications in the series, please refer to page 13.

A Bibliography of Final Reports for Energy Conservation and Renewable Energy Research Projects

From the beginning of the A/CERRF progam until its conclusion on March 31, 1991, funding was provided continuously for energy conservation and renewable energy research projects. Initially, the A/CERRF program supported a wide range of energy research projects in conventional oil and gas, coal, energy conservation/renewable energy, and fusion energy. Eventually, the focus shifted to research on coal and energy conservation/renewable energy, with a hydrogen component added two years before A/CERRF ceased.

The period from 1984/85 to 1988/89 was especially active for researchers who worked on energy conservation and renewable energy projects. Altogether, 45 such projects were carried out during those five years, bringing the total of all energy conservation/renewable energy projects funded by A/CERRF to 67.

The following bibliography is a complete listing of all research reports produced as a result of these projects. Since technology transfer publications are used to summarize the principal findings of these projects, individual reports have not been reproduced for general distribution. The full reports are available for viewing in the Energy/Forestry, Lands and Wildlife Library and in the Research and Technology Branch library of Alberta Energy. The addresses of these libraries are as follows:

Library Services
Alberta Energy/Forestry, Lands and Wildlife
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Alberta Energy
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Energy Conservation Projects

General Energy Conservation

Project U-10 - Control of Energy Losses by Microbial Fouling of Heat Exchangers:

and

Project U-81-6 - Ice Nucleation Techniques for Defouling of Heat Exchangers:

Costerton, J.W. (n.d.). Control of Energy and Production Losses Caused by Biofouling of Heat Exchangers and Industrial Water Systems. University of Calgary.

Costerton, J.W. 1982. Modification of the Ice Nucleation Technique to Produce a Practical Method for Defouling Heat Exchangers. University of Calgary.

Project U-35 - Using Thermal Discharges from Power Plants:

MacKenzie, F.B. and A.H. Laycock. 1979. Thermal Power Plant Waste Heat Utilization in Alberta: Potential and Problems. University of Alberta.

Project U-34 - Fuel and Fertilizer Production from Dairy Manure:

Feddes, J.J.R., J.B. McQuitty and J.T. Ryan. 1980. Fuel and Fertilizer Production from Dairy Manure. University of Alberta.

Project U-79-17 - Efficient Use of Low Heating Value Fuels:

Karim, G.A. 1980. The Efficient Utilization of Low Heating Value Fuels. Interim Report to June 30, 1980. University of Calgary.

Karim, G.A. 1982. The Efficient Utilization of Low Heating Value Fuels. University of Calgary.

Project 32-35 - Streamline Device for Transport Trucks:

McKenzie, R.P. 1982. A Streamline Device for Trucks and Buses.

Project 32-29 - Energy from Waste Wood:

An Evaluation of Wood Residue Utilization Systems as a Technology Suitable for the Alberta Sawmill Industry. 1980. B.H. Levelton & Associates Ltd.

Study on Energy and Chemicals from Wood. 1979. SNC Tottrup Services Ltd.

Project 32-1 - District Heating Study:

Edmonton District Heating Feasibility Study. Phase One Technical Feasibility. 1980a. Stanley Associates Engineering Ltd./Ekono Engineering Consultants.

Edmonton District Heating Study - Financial Feasibility. 1980b. Stanley Associates Engineering Ltd./Ekono Engineering Consultants.

Project #17 - Energy Conservation in Sour Gas Processing:

Berlie, E.M., R.A. Ritter and J.A. Sames. 1982. Energy Consumption in the Natural Gas Industry. Bow Valley Research Ltd.

Colley, D.G., R.A. Ritter and R.E. Hensley. 1981. Recuperative Heat Exchange Incinerator Pilot Plant. Bow Valley Research Ltd.

Paskall, H.G. 1979. Capability of the Modified Claus Process. Western Research and Development.

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Paskall, H.G., R.A. Ritter and P.R. Dale. 1985. Catalytic/Recuperative Incinerator Pilot Plant Investigation. Bow Valley Research Ltd.

Paskall, H.G., R.A. Ritter, J.A. Sames and P.R. Dale. 1985. An Energy Audit Strategy for Gas Plants. Bow Valley Research Ltd.

Ritter, R.A. 1978. Claus Plant Waste Gas Incinerators. Western Research and Development.

Sulphur Plant Workshop. 1981. Western Research and Development.

Energy Conservation in Buildings

Project U-1 - Alberta Home Heating Research Facility:

Ackerman, M.Y. 1983. A Study of Residential Housing Envelope Heat Losses. University of Alberta.

Ackerman, M.Y., J.D. Dale, T.W. Forest, W. Pittman, G.W. Sadler and D.J. Wilson. 1983. Fourth Annual Report on the Alberta Home Heating Research Facility: Results of the 1982-83 Heating Season. University of Alberta.

Ackerman, M.Y., J.D. Dale, T.W. Forest, W. Pittman, G.W. Sadler and D.J. Wilson. 1984. Fifth Annual Report on the Alberta Home Heating Research Facility: Results of the 1983-84 Heating Season. University of Alberta.

Ackerman, M.Y., J.D. Dale, T.W. Forest, G.W. Sadler, D.J. Wilson and M. Zaheeruddin. 1983. Final Report on the Alberta Home Heating Research Facility: Results of the 1981-82 Heating Season and Part of the 1982-1983 Heating Season to January 1983. University of Alberta.

Gilpin, R.R. and W.H. Chan. 1979. Computer Simulation of Passive Solar Heating. University of Alberta.

Gilpin, R.R., J.D. Dale, T.W. Forest and M.Y. Ackerman. 1980. Construction of the Alberta Home Heating Research Facility and Results for the 1979-1980 Heating Season. University of Alberta.

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Zaheeruddin, M. 1983. A Simulation Model for a Direct Gain Passive House and Its Experimental Verification. University of Alberta.

Project 32-13 - Insulation Properties of Flat Built-Up Roofs:

The Attachment of Insulation to Existing Built-Up Roofs. Final Report and Supplementary to Final Report. 1981. Alberta Roofing Contractors Association Ltd.

Project 32-60 - Passive Solar-Heated Community Center:

Final Report on the Design of the Anzac Community Centre. 1983. Sunergy Systems Ltd.

Project RP#76 - Energy-Efficient Masonry Fireplace:

Warren, D.J. 1982. Energy Efficient Masonry Fireplace Design and Performance Evaluation Study. Centre for Research and Development in Masonry.

Warren, D.J. 1983a. Energy Efficient Masonry Fireplace. Design and Performance Evaluation. Centre for Research and Development in Masonry.

Warren, D.J. 1983b. Energy Efficient Masonry Fireplaces. Retrofitting Existing Masonry Fireplaces to Improve Thermal Performance. Centre for Research and Development in Masonry.

Warren, D.J. 1984. Design, Serviceability and Testing of Masonry Fireplaces and Domestic Chimneys. Centre for Research and Development in Masonry.

Warren, D.J. and H. Morstead. 1983. Specifying the Design and Construction of Masonry Fireplaces and Domestic Chimneys. Part 1. An Appraisal of North American Practice. Centre for Research and Development in Masonry.

Project ECB/84/3-34 - Edmonton Energy Conservation Center:

The Edmonton Energy Conservation Centre - Phase I Retrofit. 1985. Tomorrow Foundation.

Staszenski, B. 1986. Edmonton Energy Conservation Centre, Phase II Final Report.

Staszenski, B., S. Fleming, T. Kuchera and F. Thomas. (n.d.) Preliminary Development Program for the Environmental Resource Centre of Alberta.

Project ECB/83/1b-14 - Self-Help Retrofit Manual for Owners of Multi-Family Housing Units

Ostrowski, J., H. Ostrowski and R. Chapla. 1987. Self-Help Retrofit Manual for Owners of Multifamily Housing Units. ARE-Alternative and Retrofit Energies Inc.

Project ECB/83/3-31 - Retrofit Wall System for Residential Housing:

Ostrowski, J., H. Ostrowski and R. Chapla. 1987. Retrofit Wall System for Residential Housing. ARE-Alternative and Retrofit Energies Inc.

Project ECB/83/3-30 - Energy Savings and Payback of Retrofit Basement Wall Insulation:

Ackerman, M. and J.D. Dale. 1985. Measurement and Predictive Techniques of Basement Wall Heat Losses. Prepared for Dow Chemical Canada Inc. University of Alberta.

Greeley, D.S. 1986. Energy Savings and Payback with Basement Wall Insulation Retrofit. Dow Chemical Canada Inc.

Project 22A - Energy-Efficient Housing Display Program:

A Project to Build and Display Energy-Efficient Single Family Homes in Alberta. 1982. HUDAC Alberta Council.

Energy Efficient Housing Display Program - Final Report. 1987. Alberta Home Builders' Association.

Project ECB/83/3-32 - Townhouse Retrofit Demonstration:

Townhouse Retrofit Demonstration Project. 1985. Love Energy Consultants.

Project ECB/83/4-41 - A Survey of Air Leakage in Alberta Homes:

Johnston, B. 1986. A Survey of Air Leakage in Calgary Homes. Bill Johnston Architect Ltd.

Project RP#103 - Construction and Testing of a Masonry Module:

Dale, J.D. and L.W. Kostiuk. 1986. Summary Report on the Thermal Performance of an Insulated Masonry Structure. University of Alberta.

Kostiuk, L.W. and J.D. Dale. 1984. Thermal Performance of an Insulated Masonry Structure: Results of the 1983-84 Heating Season. University of Alberta.

Kostiuk, L.W. and J.D. Dale. 1986. Final Report on the Thermal Performance of an Insulated Masonry Structure. University of Alberta.

Project ECB/83/6-63 - Concrete Masonry Walls for Thermal Storage, Heating and Insulation

Warren, D.J. and B. Daignault. 1984. Thermal Properties of Masonry Elements and Buildings. Centre for Research and Development in Masonry.

Project ECB/83/6-63A - Computer Program for Analysis of Thermal Mass

Byrne, A.P. and T.G. Lee. 1986. Development of a Computer Program for Analysis of Thermal Mass in Buildings. University of Calgary.

Project ECB/83/2-23 - Sizing of Warm Air Furnaces for Residential Use

Sworder, J.E. 1984. Report on the Selection of Warm Air Furnaces for Residential Housing. J.E. Sworder Engineering.

Project ECB/83/2-21 - Development of Higher Efficiency Gas-Fired Furnaces

Melia, P.M. and D.J. Martin. 1986. Development of Higher Efficiency Gas-Fired Appliances. Flame-Master Division of Bow Valley Resource Services Ltd.

Project ECB/83/2-20 - Seasonal Efficiency of Residential Natural Gas Furnaces

Dale, J.D. and J. Kasha. 1984. Performance of Natural Gas Furnaces. University of Alberta.

Kasha, J.F. and J.D. Dale. 1986. A Study of the Performance of Six Residential Natural Gas Furnaces. University of Alberta.

Project ECB/83/6-60 - Development of an Insulating Curtain for Residential Installation

R&D of an Insulating Curtain for Residential Application. 1985. Sunergy Systems Ltd.

Project ECB/83/6-62 - Residential Air-to-Air Heat Exchanger Using Heat Pipe Technology

Williams, P.G. and C.T. Grusendorf. 1987. Residential Air-to-Air Heat Exchanger Using Heat Pipe Technology. EMC Energy Management Consultants Ltd.

Project ECB/83/1a-2 - Energy Conservation in Public Swimming Pools

Killarney Indoor Swimming Pool Energy Audit and Retrofit Study. 1984. IBI Group.

Renfrew Indoor Swimming Pool Energy Audit and Retrofit Study. 1988. IBI Group.

Project ECB/83/1b-11 - Development of a User-Friendly Computerized Building Management System

Wong, L. 1986a. "Integration I" - User Friendly Computerized Building Management System. 1984/85 Annual Report. MLW Interspace Automation Ltd.

Wong, L. 1986b. "Integration I" - User Friendly Computerized Building Management System. 1984/85 Annual Report. Appendix A: Host Computer Operating Manual. MLW Interspace Automation Ltd.

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Wong, L. 1986d. "Integration I" - User Friendly Computerized Building Management System. MLW Interspace Automation Ltd.

Project ECB/83/2-22 - Multi-Zone Setback Thermostat

Set Back Thermostat and Controller with Independent Multizone Control. 1986. Daxcom Electronics Inc.

Project ECB/83/1b-12 - A New Heat-Conserving Control System for Warehouse-Type Buildings

A New Heat-Conserving Control System for Warehouse-Type Buildings. 1987. Camcon Controls Ltd.

Project ECB/83/1b-10 - Demonstration of a Cost-Effective Energy Management System

Cost-Effective Energy Management System. 1986. Whitaco Holdings Ltd.

Project ECB/83/5-50 - Inventory of Building Design and Analysis Computer Programs and a Weather Input Data Base for Alberta

Report on Inventory of Computer Programs. 1984. Vinto Engineering Ltd.

Report on Development of an Alberta Weather Input Data Base. 1985. Vinto Engineering Ltd.

Project ECB/83/6-61 - Energy-Efficient Fluorescent Lighting Ballast

Design Analysis of an Electronic Fluorescent Lamp Ballast. 1985. Comtrac Industries Limited.

Project ECB/83/1b-13 - Computer Simulations for Mechanical Systems in Buildings

Development of an Interactive Graphical Microprocessor for Mechanical Systems Simulation. 1987. Southern Alberta Institute of Technology.

Project ECB/85/1-1 - Programmable Controller for Parking Lot Block Heater Service

Final Report. Programmable Controller for Parking Lot Block Heater Services. 1986. Magna IV Engineering Ltd.

Programmable Controller for Parking Lot Block Heater Services. Technical Feasibility and Cost Study. 1985. Magna IV Engineering Ltd.

Project ECB/85/1-2 - Comprehensive Retrofit Measures in Commercial Buildings

Mutual, L. and R. Godderis. 1986. Comprehensive Retrofit Measures in Commercial Buildings. Phase I Report. Adept Engineering.

Project ECB/85/1-3 - Retrofit Curtain for Overhead Doors

Leckie. R.E. 1985. Retrofit Curtain for Overhead Doors. Phase I Report: Review of Proposed Technology. Appropriate Technology.

Leckie. R.E. 1986a. Retrofit Curtain for Overhead Doors. Phase II Report: Curtain Development and Testing. Appropriate Technology.

Leckie. R.E. 1986b. Retrofit Curtain for Overhead Doors. Final Report: Market Analysis. Appropriate Technology.

Project ECB/85/1-4 - Demonstration of Mini-Fluorescent Lighting

Love, J.A. 1986. Demonstration of Minifluorescent Lighting: Phase I Report. The University of Calgary.

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Project ECB/85/2-1 - Survey of Energy-Efficient Furnaces

Mayhew, W.J. 1985. Survey of Medium and High Efficiency Gas Furnaces. Phase I Report. Howell Mayhew Engineering Inc.

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Project ECB/85/4-1 - Swimming Pool Dehumidification Demonstration

Swimming Pool Dehumidification Demonstration. Phase I Report. 1986. Lamb McManus Associates Ltd.

Swimming Pool Dehumidification Demonstration. Final Report. 1989. Lamb McManus Associates Ltd.

Project ECB/85/4-2 - Peak Electrical Demand Reduction Through Co-generation

Peak Electrical Demand Reduction and Waste Heat Recovery Through Cogeneration. Preliminary Analysis Report. 1986. Cheriton Engineering Inc.

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Project ECB/85/4-3 - Demonstration of Free Cooling in Building Humidification Systems

Demonstration of Evaporative Cooling Utilizing Building Humidification Systems. Phase I Report. 1986. Safronek Pomeroy & Associates Ltd.

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Demonstration of Low Emissivity Ceilings in Arenas. 1986a. Sunton Engineering Ltd.

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Sadler, G.W. and K. Checkwitch. 1988. Development Status of Natural Gas Fired Residential Heat Pumps. University of Alberta.

Waste Heat Recovery/Low Temperature Heat Utilization

Project WHR/85/1-1 - Grey Water Heat Recovery from Commercial Laundries

Mutual, L. and R.A. Godderis. 1986. Grey Water Waste Heat Recovery in Commercial Laundries. Phase I Report. Adept Engineering.

Phase II Report on Grey Water Waste Heat Recovery in Commercial Laundries. 1988. RTM Engineering Ltd.

Project WHR/85/1-2 - Heat Recovery in a Recreation Facility

Conceptual Report for Waste Heat Recovery from the Refrigeration Unit at the Okotoks Triplex Arena. 1985. Kasten Eadie Engineering Ltd.

Project WHR/85/1-3 - Heat Recovery in a Meat-Packing Plant

Crawford, R. 1985. Heat Recovery in a Meat-Packing Plant. Report on Stage I Design and Pricing. Crawford Consulting Engineering Ltd.

Crawford, R. 1986. Heat Recovery in a Meat-Packing Plant. Report on Stage 2 Construction. Crawford Consulting Engineering Ltd.

Crawford, R. 1987. Heat Recovery in a Meat-Packing Plant - Final Report. Crawford Consulting Engineering Ltd.

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Project WHR/85/2-3 - Co-generation Demonstration in Commercial Buildings

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Project WHR/85/8-1 - Utilization of Waste Heat for Crop Production

Utilization of Waste Heat for Crop Production. Preliminary Stage Report. 1986. C.W. Reclamation.

Energy Conservation in Industry

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Ritter, R.A. 1989. An Evaluation of the Waste-To-Energy Concept and Its Application in Rural Alberta. Western Research.

Renewable Energy Projects

Wind Energy

Project RP#46A - Comparison of Wind Turbines

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Baker, D.R. 1986b. Survey of Wind Turbine Installations in Alberta in 1981. Appendices. DRB Engineering Consultants Ltd.

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Evaluation of Small Wind Turbines. (n.d.) Alberta Agriculture.

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Paterson, B.A., D.R. Baker and N.E. Jensen. 1985. Evaluation of Low Volume Wind Turbines for Pumping Water. Alberta Agriculture.

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Beliveau, K. 1980a. Solar and Wind Energy Research Program Index. Corporate Author Index 1980. Alberta Research Council.

Beliveau, K. 1980b. Solar and Wind Energy Research Program Index. Author Index 1980. Alberta Research Council.

Beliveau, K. 1980c. Solar and Wind Energy Research Program Index. List of Holdings 1980. Alberta Research Council.

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Project RP#46 - A Large Delta-Blade Wind Turbine, An Alberta Development

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Baker, D.R. 1986. Performance Test Results of the Deltx WP50 Windpump Prototype. DRB Engineering Consultants Ltd.

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Field Installation and Testing of Large Delta-Blade Wind Turbine. Development Project. 1982b. Abax Energy Services Ltd.

Solar Energy

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Weichman, F.L. and A.A. Berezin. 1980. Photovoltaic Effect in Cu_2O. Department of Physics, University of Alberta.

Project U-79-1 - An Atlas of Solar Energy for Alberta:

Nkemdirim, L.C. 1981. A Solar Energy Atlas for Alberta, Volumes I and II. The University of Calgary.

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Cheng, K.C. 1981. Application of Boiling and Condensation Heat Transfer to Flat Plate Solar Collectors in Cold Regions. April 1, 1979 - September 30, 1980. University of Alberta.

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Rink, R.E. and H.Q. Le. 1982. A Study of Improved Control Strategies for Bilinear Heat-Transfer Processes in a Solar-Assisted Heat Pump System. University of Alberta.

Geothermal Energy

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Jones, F.W. and H.L. Lam. 1979. An Investigation of Geothermal Energy Resources of Alberta - 12 Month Report. University of Alberta.

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